ABSTRACT

The present invention saves all process state, memory, and dependencies related to a software application to a snapshot image. Interprocess communication (IPC) mechanisms such as shared memory and semaphores must be preserved in the snapshot image as well. IPC mechanisms include any resource that is shared between two process or any communication mechanism or channel that allow two processes to communicate or interoperate is a form of IPC. Between snapshots, memory deltas are flushed to the snapshot image, so that only the modified-pages need be updated. Software modules are included to track usage of resources and their corresponding handles. At snapshot time, state is saved by querying the operating system kernel, the application snapshot/restore framework components, and the process management subsystem that allows applications to retrieve internal process-specific information not available through existing system calls. At restore time, the reverse sequence of steps for the snapshot procedure is followed and state is restored by making requests to the kernel, the application snapshot/restore framework, and the process management subsystem.